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NOTES ON CONDUCTING
THE BEHAVIOR SETTING SURVEY
BY INTERVIEW METHOD

C. Burgess Ledbetter

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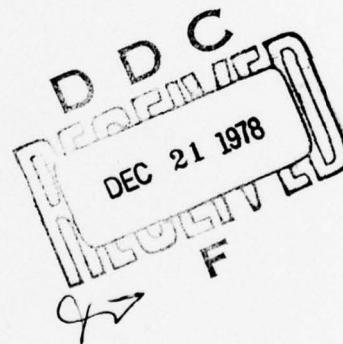
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Practical guidelines for conducting the behavior setting survey by interview method are presented. This training manual for the layperson describes the data, survey forms and interview techniques.

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Preface

This report was prepared by C. Burgess Ledbetter, Research Archi-
tect, of the Applied Research Branch, Experimental Engineering Division,
U. S. Army Cold Regions Research and Engineering Laboratory.

The report was prepared during research sponsored by the Office,
Chief of Engineers, under DA Project 4A762719AT06, Military Construction
and Maintenance in Cold Regions, Task 01, Cold Regions Facilities Opera-
tions, Maintenance and Engineering of Military Installations, Work Unit
003, Habitability Criteria for Military Installations in Cold Regions.

This report is prepared as a CRREL Special Report. The primary
reference is a text being prepared by Dr. Robert Bechtel of the Environ-
mental Research and Development Foundation (ERDF), Kansas City, Missouri.
ERDF has been under contract to CRREL for Habitability Research.

This report is written as an informal guide describing the steps R.
Bechtel and this author took in conducting the behavior setting survey
(by interview method) in Alaska. This report supplements Bechtel's text
and on a limited scale it may be useful as a supplement to R. Barker's
text, Ecological Psychology.

CONTENTS

DATA ON CONDUCTING THE BEHAVIOR SETTING
SURVEY BY INTERVIEW METHOD

C. Burgess Ledbetter

INTRODUCTION

During the field research phases of the research project "Habitability
Criteria for Military Installations in Cold Regions" sponsored by the
Corps of Engineers, it was incumbent upon me to learn and later teach
the behavior setting survey to several people. As Project Officer, I
included my services in the contract under "services provided by the
government" which was awarded to the Environmental Research and Development
Foundation of Kansas City, Mo. Dr. Robert Bechtel is Director of Research
and Principal Investigator for the contract portion.

It was decided that the traditional method of conducting the behavior
setting survey by observation would be out of the question. The time-
consuming and expensive use of observation for acquiring data, as originally
developed for the survey by Barker[2], is often the reason that Behavior
Setting Methodology is so seldom used.[14] Although observations provided
some data in our research, interviewing and use of records routinely
kept by organizations were decided to be the best sources of data.
Reliability of this data will be covered in a future report.

In this paper I report on aspects of my learning process which
resulted in acquiring sufficient knowledge to conduct the behavior
setting survey on my own and then teach it to lay persons hired for
three months to conduct the survey. I feel the stress I was under to
quickly learn the survey and then efficiently teach it to others provides
me with a good background to write an informal report hopefully facili-
tating the learning of the survey for a wider range of persons.

I reference a text[4] being prepared by Bechtel which provides an
explanation of the survey and therefore I leave out explanations of
terms, rating scale calculations and analysis of survey data in this
report. Barker's text[2], which provides the basis for all research in
behavior settings, is considered by many students (as well as their
professors) and practioners to be too complex to suffice as a "how-to"
book on conducting the survey. The intent of this paper is to supplement
Barker's and later Bechtel's book.

The value of the Behavior Setting Methodology to provide criteria
for organizational structure, community planning, interior design, post-
occupancy evaluation and countless other design and management operation
aspects of the environment is covered in other sources. These sources
include descriptions of the cold regions military environment[8-11], a
supermarket[12], a mental health care hospital[15], a church[17], communities[2] and
low income housing[11], to name a few.

The tone of this report, to facilitate learning and reading, is conversational. The report is divided into four sections. First, in Section 2, I present the steps I went through to learn the survey while conducting the field research with Bechtel. Section 3 discusses steps I took in teaching the survey to people hired on to the project. Section 4 discusses the practical benefits of behavior settings in both surveying and later changing business organizations.

I hope, by having this report in hand and backed up by Bechtel's and Barker's texts, the reader will find the learning and application of behavior setting theory to be painless.

LEARNING THE SURVEY

The first environment to be surveyed in the Cold Regions Habitability Project was the Air Force's Murphy Dome Aircraft Control and Warning Station (AC&W) (Fig. 1). Through our Air Force Alaskan Air Command liaison, the Station Commander knew of our arrival and had a vague notion of what we were up to or at least that we had proper clearances.

The AC&W stations generally average 100 persons, all males. The officer to enlisted man ratio is approximately one to ten. Tours are for twelve months. Guest rooms are maintained for a variety of visitors during the year. Staff visits and construction crews for maintenance work at sites are the most dominant sources of visitors. The stations have become accustomed to a variety of visitors. At one station, a group of biology researchers and students were housed while their field research kept them occupied with studying the local bird life.

Since our AAC liaison was a management analyst and our questions centered around manpower, manhours and activities performed, it was assumed by many site personnel that we were Army people performing a survey for the Air Force to determine how many people could be cut from the work force. In the past, Air Force personnel management staff had come to the stations about once a year to conduct a manpower survey. Resulting from each of these was a cut in manpower. Supervisors were bitter about the cuts. The last survey was performed eight months previously and they were primed for another but not this early. We capitalized on their anxiety about manpower cuts in two ways. First, we asked them how the last manpower survey affected them. They told us where the cuts were made, which helped us determine what activities went on in the section. Secondly, since we showed concern and interest in what they really do, they quickly began to trust us. In general they felt the Air Force manpower survey was too cursory, that the staff was more interested in getting back to headquarters than understanding their needs. On the other hand our questions appeared most detailed, getting at what goes on daily. As one supervisor phrased it about us, "they got enough information to write a Bible about us." In fact we only spent about two hours per section which included up to six men. We followed a mentally stored format of questions (behavior setting survey) and could ask pointed questions about "what really goes on" making no judgments about the data. Opinions of the personnel are of primary use later when analysis of the data indicates areas for change. (See Section 4 of this report for further discussion of benefits of behavior settings for research.)

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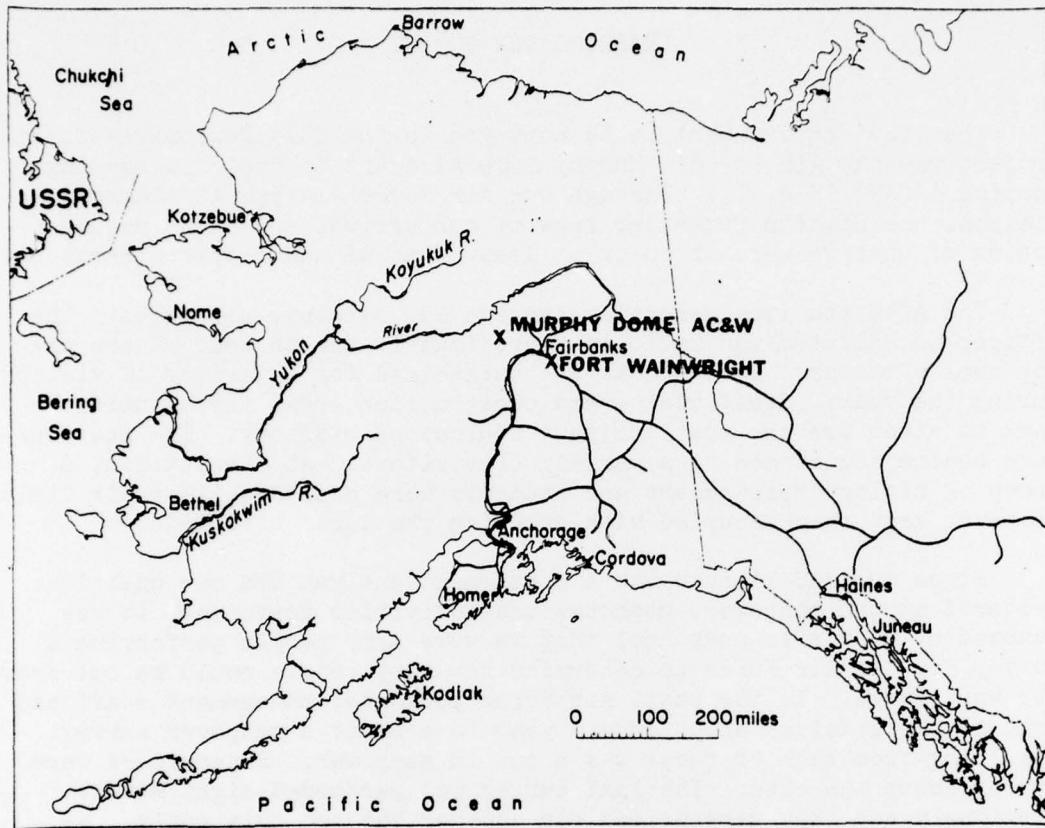
Figure 1. Map of Alaska and Aerial Photograph of Murphy Dome.

In defense of Air Force undermanning practices, I should note that the many section supervisors, predominantly senior NCO's, expressed that the broad job responsibility they had at the remote stations, which called for long hours and working out complex problems such as forecasting yearly supply needs (all non-perishable goods are delivered one time in the summer by boat), was far superior in job satisfaction than the single responsibility type of job at major bases. More personnel to perform the jobs would have reduced the responsibility falling upon each man.

When we arrived at the site the Commander met with us briefly primarily as a matter of formality. We were turned over to the Executive Officer where we began the details of the survey. A site map and phone directory were given to us. Unfortunately I cannot include copies of these in this report since they are classified documents.

For the Station Civil Engineer the phone book listed the following items:

      Civil Engineer's Officer
      Civil Engineer's Clerk
      Preventive Maintenance
      Roads and Grounds
      Service Call Desk
      Utility Plant
      Heating Plant
      Fire Chief

The first five items above were activities centered in one building belonging to the Civil Engineer. In the survey, a number of settings were identified which occur in the one building. Figure 2 identifies these settings.

Figure 3 is a sketch of the floor plan of the Station Civil Engineer's main building mentioned above. Of prime importance is the usefulness of interviewing the staff in their work areas. Desk layout, room layout, names and titles on desks and above doors provide clues as to the activities that go on. Bechtel discusses the use of the K-21 scale (see Appendix 1) for differentiating between settings. Indications that are obvious from office layout, observed when possible and reported by interviewees, allow evaluation of items on K-21 scale. K-21 scale items include overlap of visitors and staff, overlap of leadership, spatial contiguity, similarity of behavior objects, work flow, temporal interdependence and similarity of behavior mechanisms. In Figure 4, I show, on the floor plan of Figure 3, clues useful in identifying the various settings and useful in conducting K-21 tests.

Bechtel, in his new book[4], goes through a sample K-21 scale he and I conducted in a laboratory office at Fort Wainwright. Since at Murphy

CE Administrative Offices
Carpenter Shop
Key Cutting Room
Paint and Glass Shop
Plumbing and Refrigeration Shop
Roads and Grounds Office
Supply and Work Control Center
Hallways and Breakroom of Building 123
Roads and Grounds Taco Party
Inspector General to the CE (Maintenance Quality Control Inspecting Team)
Staff Assistance Visit to the CE

List of settings in CE shop at Murphy Dome

Figure 2
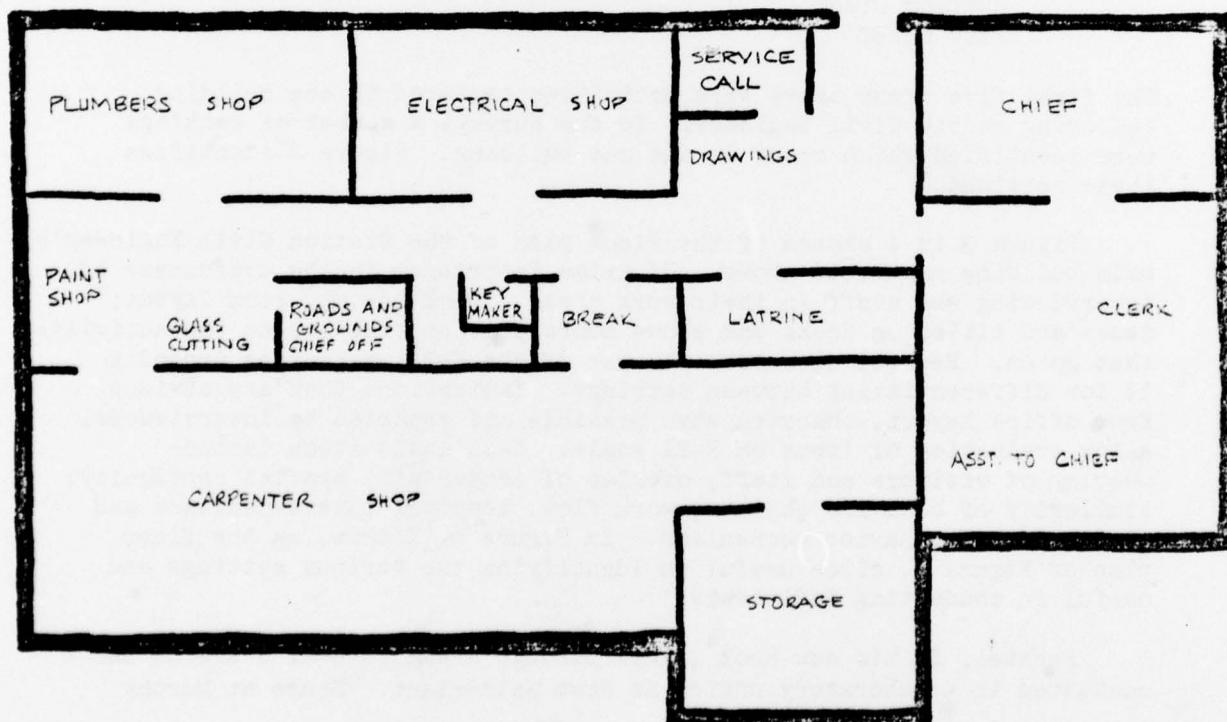
Floor Plan of Murphy Dome AC&W CE Shop

Figure 3
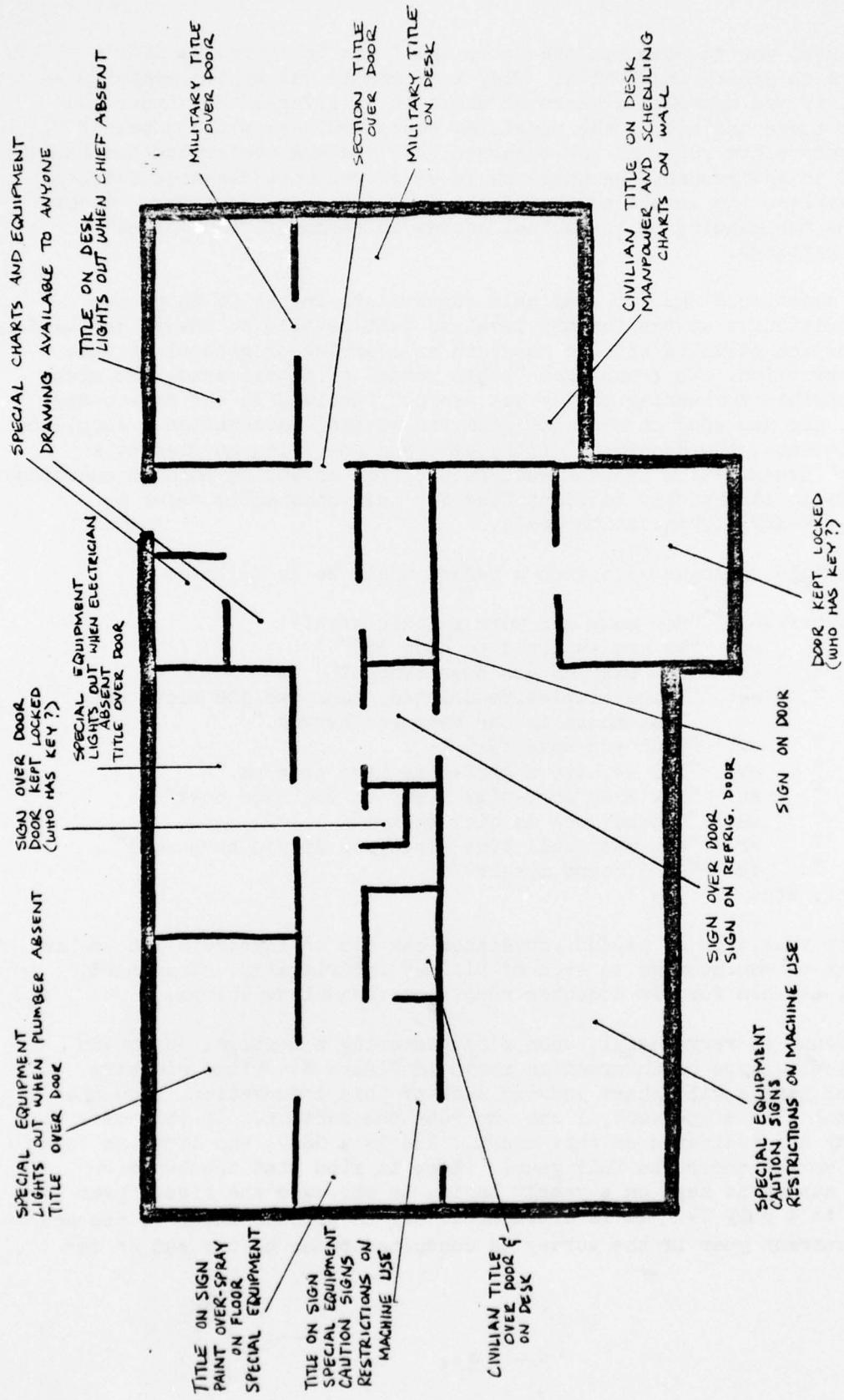
Figure 4. Clues to K-21 test at Murphy Dome CE Shop.

Dome Bechtel was to complete the forms and I was to learn, we didn't
take time to record the K-21's. They were mostly calculated mentally --
that is, if you approach a score of about 18 on several test items you
can stop there and assume the remaining tests would exceed a total of 21
and therefore the settings are separate. If you are performing a detailed
study of an environment, perhaps one in which you must diagnose overlaps
of activities, the actual scores of the K-21 test are necessary. Bechtel
discusses the meaning of the actual scores in terms of "boundaries"
between settings.

We questioned the two available supervisors in the CE Shop. We
found individuals at the foreman level to best be able to answer detailed
questions and still be able to maintain an overview or general picture
of his operation. We found that "token heads" of departments, who might
be responsible for making policy but are not involved in the day-to-day
details, are not good sources for behavior setting information. Suspicion
of our intents, the anonymity of the data and obsession to present a
"perfect" organization prevent such people from answering pointed questions.
These people can quickly be identified for they constantly refer to
"pie-in-the-sky" organization goals.

A sample dialogue with such a person would be as follows:

Interviewer: "How many men work in this area?"
"   ee: "We are supposed to have 15."
"   er: "How many do you have though?"
"   ee: "Those (expletive deleted) took two job slots away
       last month in the manpower survey."
"   er: "Then you have 13."
"   ee: "No, we have a part-time hire program."
"   er: "How many part-time hires do you have now?"
"   ee: "Two but one is sick today."
"   er: "How many full time employees do you have now?"
"   ee: "Do I count myself?"
etc., etc.

With this type of person you either ask him to introduce you to his
assistant or you must go to each of his men individually. You could,
however, ask him for his absentee record or scheduling charts.

I found it very useful, upon first entering a section, to obtain
the following type of information shown in Figure 5. Often military
personnel have a wall chart showing much of this information. Now that
I have the list of persons, I ask who runs the section. In this case it
is a lady not indicated on this chart. She is a GS-9, who lives in town
and has worked there the full year. (Keep in mind that the behavior
setting survey is kept on a yearly basis, in our case the fiscal year 1
July 73 to 1 July 74. It is often necessary to project ahead to the end
of the current year if the survey is conducted prior to the end of the
year.)

INSTALLATION MAINTENANCE FACILITY - STOCK RECORDS SECTION

Job Title	Name	Employment Status*	Sex	Where Person Lives	Number of People and Employment Date †
Stock Acct. Spec.	Smith	GS5	F	Town	
" Control & Acct. Spec.	Doe	E5	M	Post Fam. Hsg.	
Punch Card	Mills	E4	M	Post Fam. Hsg.	2 March
Stock Control & Acct. Spec.	Homer	E4	M	Barracks	
" " " "	Jones, T.	E2	M	Barracks	2 April
Supply Clerk	Jones, A.	GS4	F	Town	
" "	Clark	GS4	F	Town	2 Nov.

For total persons working in this section, take those presently employed (7) plus those replaced during year (3).

* Necessary for social class (see Appendix 4). GS = Civilian. E = Military Enlisted.
†2 indicates person came to work during year and replaced a person with same identifiers. Month person came to work is also shown.

Figure 5.   Initial information from an interview.

I then go to the head of the section and, using the job titles as reference, ask what tasks are performed. I refer you back to Figure 4 for how physical layout clues are of utmost importance.

During Bechtel's questioning of the staff at Murphy Dome I kept thinking, "If only I had a questionnaire to follow. He keeps asking the same questions each time?" I soon realized that I didn't really have a sufficient grasp of the survey. I made sure that such an oversight would be averted when I taught the survey to others, as I discuss in the next chapter.

What Bechtel was doing was quickly determining the individual settings. If the conversation allowed, he would stop the individual from talking about the activities to answer specific questions about the setting or jot down the settings and come back to them later with specific questions. I later was able to structure my interviewing to the point that the person being interviewed actually identified the settings and provided the detailed information about each one as we went along, with little prompting from me. I consider this the most efficient interview method. Records could be checked more easily this way since the interviewee knew exactly what I was looking for. Review of records is most important for checking the reliability of the information.

Rapid personnel rotation and an elaborate system of regulations results in the military operating similarly at the different installations. After surveying Murphy Dome, I found that almost identical work settings existed at the other AC&W stations. Recreation, off-duty time settings, etc., did differ somewhat. Ratings of all settings differed to varying degrees. For example at Murphy Dome, each billets room is occupied by only one individual, who receives a rating of 6 on penetration (degree of responsibility or participation in the setting). For two-man rooms, at the other stations, each man receives a penetration rating of 5.

Conclusion

After some practice in conducting the survey, identification of settings from clues and without resorting to running K-21 tests becomes easier. A better mental capacity for knowing what questions to ask develops, and techniques for asking questions improve. Only practice helps, text book learning is only half the process.

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TEACHING THE SURVEY

This section involves reports on my teaching the behavior setting survey to two military men's wives hired by the contractor for the survey at Fort Wainwright.

I prepared a package of tables for the trainees consisting of:

a.   K-21 Scale (Appendix 1)
b.   Master Guide for Behavior Setting Action Pattern, Mechanism Rate, Pressure, Welfare and Autonomy (Appendix 2)
c.   Behavior Setting Data Sheet (Appendix 3)
d.   Social Scale for Cold Regions Population (Appendix 4)
e.   Authority and Class Sheet for Cold Regions Organizations (Appendix 5)
f.   Occupancy Time Codes (Appendix 6)
g.   Population Form (Appendix 7)

At first I explained why the survey was being performed, i.e. it was a Corps of Engineers project. This took approximately an hour and followed formal hiring procedures performed by the project contractor's representative at Fort Wainwright.

I began the first full work day by having the trainees refer to the rating scale form and look up definitions in Barker[2]. My motive in getting them to refer to Barker from the beginning was to develop this habit rather than guessing at meanings (Bechtel's draft text was not available at this time). They spent approximately four hours at this. I purposely answered as few questions as possible and when I did my answer was usually, "What does Barker say?" Barker writes very literally, leaving little need to "read between the lines."

In the afternoon session I explained the K-21 rating scale, working directly from the form I supplied. Prior to the end of the day I made up hypothetical data and let the trainees calculate the ratings.

During the following several days I presented more hypothetical data on the settings for them to run K-21 tests and to enter on the data sheet (Appendix 3). I also had the trainees interview CRREL's Alaskan Project Office staff to determine settings, etc. This offered a good reliability check since Bechtel and I had run reliability checks earlier on the same environment (as reported in Bechtel's book). My contractor's representative, who was only recently exposed to behavior settings, polished her skills during this training session. I must admit I also learned a lot while playing the role of instructor.[4] Barker's book[2] and advanced draft copies of portions of Bechtel's book[4] came into use quite often.

Field tests for the trainees began in the second week. I took one trainee and the contractor's representative took the other. The first

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day I did all the interviewing while the trainee listened. I took time out (with apologies to the people I was interviewing) to point out such things as clues to K-21, potential settings, etc. The next day I went with the trainee only as an observer. To increase her confidence I excused myself from the interview and sketched the work areas. After a day of interviewing essentially on her own, she was ready to begin work.

The other trainee turned out to be a bit of a problem for she felt uneasy around people. Two days of interviewing on her own began to unnerve her. She felt intimidated by the people she was interviewing. Sensing that she might quit it was decided to have her enter on the Data Sheet the populations from the Population Form (Appendix 7) and to perform the calculations on the Data Sheet for the three of us. She mastered the calculator and was very grateful not to have to go "out there" anymore. This method of operation turned out to be very favorable with all of us since entering the populations and running the calculations is most tedious. Appendix 8 differentiates areas of the Data Sheet that she handled.

I found a tendency among all of us to "remain at the office" whenever possible rather than go out to interviews. I would recommend in future situations that interviewers complete their portions of the format sheets while in the field and come back only to turn these in, ask questions and get new forms. This boosts efficiency because it encourages surveyers to go more directly to the actual forms rather than to take extensive notes and fill out the format sheet later. Also it is more reliable to go directly to the format sheet in the field because one can quickly check those things often found missing in notes.

In surveying the military, physical appearance is of utmost importance. It appears that the military personnel are suspicous of people displaying "long hair" and clothes more "mod" than that sold in the Post Exchange. The surveyor must be aggressive and tactful enough to approach high level civilians and military personnel to gain permission to survey their section. Although high level authorization has already been acquired, it seldom reaches throughout the command or is remembered. Justification for the survey, its purpose and intended use, anonymity of data, etc., must be sincerely conveyed by the interviewer time after time. **Anything,** such as unusual physical appearance (as set by the survey population norm) that would cause the people being interviewed to be uneasy, limits the survey. For example, the interviewer who later did the calculations learned a very good lesson. One day she wore a very short mini-skirt in a predominantly male military work section. She swore never to try that again! Perhaps this contributed to her feeling of being intimidated by the people she was interviewing.

One of the essential elements of the behavior setting survey is its unobtrusive collection of data. Barker calls for participant observers, local people who aren't noticed. In the predominantly interview method

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of data collection the surveyors must strive to disrupt as little as possible, so that while interviewing, they can make observations about what is going on around them. The interviewers must do everything possible to leave the people they interviewed with positive attitudes toward the survey. Rumors fly very fast -- much faster than the surveyors. If one breach of confidence evolves, the entire survey can be seriously jeopardized. See Rosenthal[13] for examples of effects the interviewer can have on people.

A continuing question arose, "How detailed data should we get?" Of course the immediate answer is that the data should at least be sufficient to complete the Data Sheet on each setting and to identify every setting that occurs. But often one is faced with the opportunity of extensive records which can provide exacting and detailed information about occupancy times, participation levels, etc. One must make a judgment about the time required to extract the information. If it would take only a few hours of time for several settings, then it's best to go ahead. But if it also requires the time of the person being interviewed to help you, be more cautious because they may not have the time or may get into trouble for taking the time. Again try not to create a situation that could produce adverse rumors.

Be solicitous, emphasize facts and have a reservoir of quick "reasons" for needing the data! For example, some persons question why we include separate data about blacks; others ask why don't we include Mexican-Americans and Puerto Ricans in separate data. (Interestingly enough, only whites were interested in asking these questions.) A surveyor's response to this should be something like, "the remote stations we surveyed experienced no racial tension, while we were having a lot here. We want to see if our data indicates the contributing factors." Usually the person being interviewed would give us their idea of why racial tension occurred and we would acknowledge it politely. The matter was seldom pursued beyond that. For the surveyor to have simply replied, "It's on the form and my boss says I have to get it" or to attempt explaining undermanning theory[1,2,4,8,12,15-17] would have been unsucessful.

Conclusion

In conclusion, the following steps have led to rapid learning of the behavior setting survey:

Step 1: Reading Chapters Two and Three of Barker[2] and, when available, related chapters of Bechtel.

Step 2: Following the Master Guide for the Behavior Setting Action Pattern, Mechanism Rate, Pressure, Welfare and Autonomy (Appendix 2), looking up definitions in Barker[2] (Chapter 4) and, when available, in Bechtel.[4]

Step 3: Practice K-21 tests from the K-21 scale (Appendix 1) and refer to Barker[2] for examples. (Bechtel will include an entire chapter on the K-21 scale in his new book.)

Step 4: Establish what population, social class, autonomy, authority and class of authority system variables you wish to apply. See Barker[2] for ones he used and Appendix 3,4,5 for those used in cold regions.

Step 5: Using Barker's[2] data sheet or the cold regions one (Appendix 3), and make a survey of a small social or office environment.

Step 6: Develop a data sheet for your own use and begin work.

The next section briefly discusses how work might begin in an office setting.

BEHAVIOR SETTINGS DO NOT OFFEND TOO MUCH

Behavior settings offer an explanation of the operation of an organization, section, etc., which does not directly challenge the personality or management style of any individual. In the conduct of a survey, only directly applicable data are acquired. Opinions regarding office conflicts, perceived problems, etc., are not required for the survey. They can be used; however, they are not a data source.

In describing a conventional survey, let's take a simplified situation of a section which is tightly controlled by one individual. In organizational behavior language he might be described as a 9-1 on the managerial grid, developed by Blake and Mouton[6]. To find this out, his subordinates would be questioned by interviewers. The work flow would be monitored; lines of communication would be recorded and plotted. No small amount of interruption would take place in conducting such interviews. And the supervisor might insist upon hearing the testimonials of his subordinates if he is the type of manager who keeps a tight control of his employees. If this were the case, the research might be invalidated, since the employees could not express their real feelings. Fear of incrimination would also keep many people quiet. If such a supervisor were in the position to approve or disapprove a survey, and he knew the type of questions that would be asked and why, it is unlikely his "ego" or "empire obsessions" would allow such a study.

But let's approach the situation from one of behavior settings where the survey is conducted by interview method. The supervisor would be informed quite honestly that the results of the survey would in large part determine, by comparison to other sections surveyed, if his section operated more like a large organization or a small organization. Small organization typically are undermanned and result in the following situations:[7]

a. Each person has to work harder.
b. Each person has to do greater and more important work.
c. A greater variety of activities exists.
d. There is less sensitivity, too, and less need to evaluate differences between people.

As a result of the above factors the following will be produced for each person in the settings:

a. Greater importance
b. More responsibility
c. Greater self-identity
d. Lower standards and fewer tests for admission to the setting.

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These preceding situations and effects include and greatly en-
hance what is normally included from industrial applications of job
enrichment, etc., which is one of the primary goals of traditional research
in organizational behavior. The supervisor could hardly disagree with
desiring any of these goals.

Would the supervisor feel challenged by the data that is col-
lected for behavior settings? The first task in conducting the
survey is to identify potential behavior settings from information
the supervisor provides regarding:

a. What the activities are.
b. What special equipment is available.
c. What people are involved in the above two.

Layout offers clues to settings. Questions such as where people
sit, who uses the copying machine, where coffee breaks are held, who has
keys to special rooms and equipment, how many hours per year are spent
in each of the settings, etc., are asked. Information is acquired
indirectly to determine what degree of responsibility the people have in
each setting. Several other parameters are rated to help describe what
goes on. In no instance are ambiguous and hard-to-prove parameters such
as motivation, employee relations, hostility, irritability, and superior/sub-
ordinate relations mentioned. Names disappear after being used only
for reference during the survey. Only the settings are named.

Following analysis of behavior setting data, it is likely that the
work section with a dominant supervisor will show, as compared with
other sections, fewer settings per capita, and fewer extra-curricular
settings such as Christmas parties, office parties, etc., per capita.
Also, lower ratings for responsibility of people per setting (penetration
scale), and many other indications that are interpreted as undesirable
or similar to organizations experiencing overmanned conditions, are
likely to be shown.

In reporting the conclusions to the supervisor no incriminations
need be made about his management style or personality. The onus of
poor operation is directed toward the environment, not the manager or
his employees. He is simply presented with the data and is asked if he
would like to see conditions improved.

To change the environment to undermanning, activities that could be
potential settings are manipulated to make them separate settings. Placing
files and bookcases for walls between potential settings which are in

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conflict with each other helps to create conditions better defining the settings (called boundaries). Increasing responsibilities of individuals who already participate in settings helps toward undermanning. For example, keys to the supply room could be assigned to an individual instead of being kept in the supervisor's office.

The goal of achieving a condition of behavior setting undermanning is obtained by making the environment more closely similar to that of smaller organizations, as opposed to a larger organization. Research[5] has shown that small organizations are usually more undermanned than large organizations. An increased number of behavior settings per capita and an increased level of responsibility of individuals in each setting generally describes an undermanned environment.

Conclusion

Behavior settings offer undisputed data to describe an environment. The data on one environment can be compared to data on another environment. The survey is not based upon hard-to-prove assumptions about perception, cognition, etc. Behavior setting data does not address personalities, yet does describe the environment in which these personalities exist. It, therefore, can be presented in an objective and factual manner not forcing people into awkward or sensitive positions for the way they operate. Following the initial survey, follow-up checks on success of changes made in the setting structure can be easily and reliably performed.

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The Identification of K21 Behavior Settings

The K-Test of interdependence of two behavior settings is based upon ratings of the degree to which:

1 The same people enter both settings;
2 The same power figure or leaders are active in both settings;
3 Both settings use the same physical space or spaces that are near together;
4 Both settings use the same or similar behavior objects;
5 The same molar action units span the two settings;
6 Both settings occur at the same time or at times that are near together; and
7 The same kinds of behavior mechanisms occur in the settings.

1 Rating of population interdependence, i.e., of the degree to which people who enter setting A (P_A) are the same as those who enter setting B (P_B). The percent overlap is judged by the following formula:

$$\text{Per Cent} = \frac{2\,P_{AB}}{P_A + P_B}$$

Where P_A = Number of people [ ] setting A,
P_B = Number of people [ ] setting B,
P_{AB} = Number of people [ ] both setting A and setting B.

This percent overlap is converted to an interdependency rating by the following scale:

Rating	Per Cent Overlap
1	95-100
2	67-94
3	33-66
4	6-32
5	2-5
6	trace-1
7	none

2 Rating of leadership interdependence, i.e., of the degree to which the leaders of setting A are also the leaders of setting B.

This is judged in the same way as population interdependence for persons who penetrate to Zones, 4, 5, or 6 settings A and B.

3 Rating of spatial interdependence, i.e., the degree to which settings A and B use the same or proximate spatial areas.

Rate on the following scale. In the case of scale points with two definitions, the most appropriate one applies; if more than one applies, give the lowest scale rating

Rating	Per Cent of Space Common to A and B	
1	95 to 100	
2	50 to 94	
3	10 to 49	or A and B use different parts of same room or small area.
4	5 to 9	or A and B use different parts of same building or lot.
5	2 to 4	or A and B use areas in same part of town.*
6	trace to 1	or A and B use areas in same town but different parts of the town.*
7	none	or A in town, B out of town.

4 Rating of interdependence based on behavior objects, i.e., the extent to which behavior setting A and behavior setting B use identical or similar behavior objects.

Rate on the following scale. In the case of scale points with two definitions, the most appropriate one applies; if more than one applies, give the lowest rating.

Rating

1 Identical objects used in setting A and setting B; i.e., all behavior objects shared.

2 More than half of the objects shared by A and B   or Virtually all objects in A and B of same kind.**

3 Half of the objects shared by A and B   or More than half of the objects in A and B of same kind.**

4 Less than half the objects shared by A and B   or Half the objects in A and B of same kind.**

5 Few behavior objects in A and B identical   or Less than half the objects of A and B of same kind.**

6 Almost no objects shared by A and B   or Few behavior objects of same kind** in A and B.

7 No objects shared   or Almost no similarity between objects in A and B.

*Objects of the same kind are different instances of objects that have the same dictionary definition; e.g., spoons are used in the behavior setting School Lunch Room and the setting Clifford's Drug Store Fountain, but they are different spoons.

5

Rating of interdependence based on molar action units, i.e., degree to which molar behavior units are continuous between setting A and setting B.

The molar behavior in behavior settings A and B may be integrated in two ways. The inhabitants of setting A may interact across the boundary with the inhabitants of setting B, e.g., the person in the cytosetting Preacher interacts directly with the members of the cytosetting Congregation in the Church Service. On the other hand, behavior begun in one behavior setting may be completed in the other, e.g., delivering lumber for a construction project starts at the setting Lumber Yard and is completed at the setting House Construction. Scales are provided for both kinds of behavior integration. For each kind of behavior integration, use the highest per cent which applies. The average of the two ratings is the final rating.

Rating	Per Cent of Behavior in A Having Direct Effects in B, or Vice Versa. (Highest Per Cent Counts)	Per Cent of Behavior Actions Beginning in A which are Completed in B, or Vice Versa. (Highest Per Cent Counts)
1	95-100	95-100
2	67-94	67-94
3	34-66	34-66
4	5-33	5-33
5	2-4	2-4
6	trace-1	trace-1
7	none	none

6

Rating of interdependence based on temporal contiguity, i.e., the degree to which settings A and B occur at the same time, or at proximate times.

Most behavior settings recur at intervals. Any pair of settings, therefore, may occur close together on some occasions and be temporally separated at other times. For example, the American Legion meets monthly, while the Boy Scout Troop meets weekly; once a month their meetings occur during the same week. The closest temporal proximity of setting A and setting B determine the column to enter the table below. The per cent of contact at the point of closest proximity determines the interdependence rating in the column at the right. The per cent of contact is computed as the ratio between the number of occurrences of both settings at this closest point of contact divided by the total number of occurrences of both behavior settings.

SCALES FOR RATING TEMPORAL INTERDEPENDENCE

Interdepend-ence Rating	Simultaneous	Same Part of Day	Same Day	Same Week	Same Month	Same Year
1	.75-1.00					
2	.50-0.74	.75-1.00				
3	.25-0.49	.50-0.74	.75-1.00			
4	.05-0.24	.25-0.49	.50-0.74	.75-1.00		
5	0-0.04	.05-0.24	.25-0.49	.50-0.74	.75-1.00	
6		0.0.04	.05-0.24	.25-0.49	.50-0.74	.50-1.00
7			0-0.04	.05-0.24	.25-0.49	0-0.49

7

Interdependence based on similarity of behavior mechanisms, i.e., the degree to which behavior mechanisms are similar in setting A and setting B.

Ratings are based on the following 12 behavior mechanisms:

Gross Motor	Writing	Eating
Manipulation	Observing	Reading
Verbalization	Listening	Emoting
Singing	Thinking	Tactual Feeling

The interdependence score is determined by the number of behavior mechanisms present in one setting and absent in the other as indicated in the following table;

Interdependence Rating	Number of Mechanisms Present in One Setting and Absent in the Other
1	0-1
2	2-3
3	4-5-6
4	7-8
5	9-10
6	11
7	12

APPENDIX 2

BEHAVIOR SETTING SURVEY

MASTER FOR SCORING ACTION PATTERN BEHAVIOR MECHANISM, PRESSURE,
WELFARE AND AUTONOMY RATINGS.

ACTION PATTERN

AESTHETICS

Participation: Does any behavior in this setting make things beautiful
or remove the unsightly?
No - (0)
Yes - percent of OT
1-20 (1) 21-40 (2) 41-60 (3) 61-80 (4) 81-100 (5)

Supply: Are beautifying materials supplied to other settings?
No - (0)
Yes - percent of OT
1-20 (1) 21-40 (2) 41-60 (3) 61-80 (4) 81-100 (5)

Evaluation: Is there approval or criticism of beautiful things here?
No - (0)
Yes - percent of OT
1-50 (1) 51-100 (2)

Teaching and
Learning: Is beautification of the environment specifically and
formally taught and learned in this setting?
No - (0)
Yes - percent of OT
1-50 (1) 51-100 (2)

BUSINESS

Participation: Does business activity occur in this setting?
No - (0)
Yes - percent of OT
1-20 (1) 21-40 (2) 41-60 (3) 61-80 (4) 81-100 (5)

Supply: Does this setting supply business materials for another
setting?
No - (0)
Yes - percent of OT
1-20 (1) 21-40 (2) 41-60 (3) 61-80 (4) 81-100 (5)

Evaluation: Is business judged and appraised here?
No - (0)
Yes - percent of OT
1-50 (1) 51-100 (2)

Teaching and
Learning: Are business practices taught and learned in this setting?
No - (0)
Yes - percent of OT
1-50 (1) 51-100 (2)

PROFESSIONALISM

Participation: Do any of the performers in this setting receive financial
recompense?
No - (0)
Yes - percent of OT of all performers
1-20 (1) 21-40 (2) 41-60 (3) 61-80 (4) 81-100 (5)

Supply: Does this setting supply materials for paid work in another
setting?
No - (0)
Yes - percent of OT of all performers
1-20 (1) 21-40 (2) 41-60 (3) 61-80 (4) 81-100 (5)

Evaluation: Are paid performers judged in this setting?
No - (0)
Yes - percent of OT
1-50 (1) 51-100 (2)

Teaching and
Learning: Is there specific job training here?
No - (0)
Yes - percent of OT
1-50 (1) 51-100 (2)

EDUCATION

Participation: Does teaching and learning in individual or group lessons take place here?
No - (0)
Yes - percent of OT
1-20 (1) 21-40 (2) 41-60 (3) 61-80 (4) 81-100 (5)

Supply: Does this setting supply materials for teaching or learning in other settings?
No - (0)
Yes - percent of OT
1-20 (1) 21-40 (2) 41-60 (3) 61-80 (4) 81-100 (5)

Evaluation: Is education overtly appraised in this setting?
No - (0)
Yes - percent of OT
1-50 (1) 51-100 (2)

Teaching and Learning: Is there learning about educational process or method in this setting?
No - (0)
Yes - percent of OT
1-50 (1) 51-100 (2)

GOVERNMENT

Participation: Is the behavior in this setting controlled by the government in any way?
No - (0)
Yes - percent of OT
1-20 (1) 21-40 (2) 41-60 (3) 61-80 (4) 81-100 (5)

Supply: Does this setting supply materials for governmental activities in other setting?
No - (0)
Yes - percent of OT
1-20 (1) 21-40 (2) 41-60 (3) 61-80 (4) 81-100 (5)

Evaluation: Are governmental activities openly judged here?
No - (0)
Yes - percent of OT
1-50 (1) 51-100 (2)

Teaching and Learning: Is there teaching and learning about government, history, law etc. in this setting?
No - (0)
Yes - percent of OT
1-50 (1) 51-100 (2)

NUTRITION

Participation: Does eating, drinking, preparing, or serving food occur here?
No - (0)
Yes - percent of OT
1-23 (1) 21-40 (2) 41-60 (3) 61-80 (4) 81-100 (5)

Supply: Do people get food or eating utensils to use in another setting?
No - (0)
Yes - percent of OT
1-20 (1) 21-40 (2) 41-60 (3) 61-80 (4) 81-100 (5)

Evaluation: Do people judge or express appreciation or criticism of food here?
No - (0)
Yes - percent of OT
1-50 (1) 51-100 (2)

Teaching and Learning: Do people learn and teach ways of preparing and serving food here?
No - (0)
Yes - percent of OT
1-50 (1) 51-100 (2)

PERSONAL APPEARANCE

Participation: Do people prepare for this setting by getting especially groomed or attired? Do people get groomed or attired here?
No - (0)
Yes - percent of OT
1-20 (1) 21-40 (2) 41-60 (3) 61-80 (4) 81-100 (5)

Supply: Do people obtain items of adornment or dress in this setting?
No - (0)
Yes - percent of OT
1-20 (1) 21-40 (2) 41-60 (3) 61-80 (4) 81-100 (5)

Evaluation: Are clothing and grooming appraised here?
No - (0)
Yes - percent of OT
1-50 (1) 51-100 (2)

Teaching and Learning: Does teaching and learning grooming or dressmaking occur in this setting?
No - (0)
Yes - percent of OT
1-50 (1) 51-100 (2)

PHILANTHROPY

Participation: Are voluntary contributions of time, materials or money made to worthy causes in this setting?
No – (0)
Yes – percent of OT
  1-20   21-40   41-60   61-80   81-100
  (1)   (2)   (3)   (4)   (5)

Supply: Does this setting provide material or money for philanthropic purposes in other settings?
No – (0)
Yes – percent of OT
  1-20   21-40   41-60   61-80   81-100
  (1)   (2)   (3)   (4)   (5)

Evaluation: Is philanthropic activity openly recognized and appraised?
No – (0)
Yes – percent of OT
  1-20   21-40   41-60   61-80   81-100
  (1)   (2)   (3)   (4)   (5)

Teaching and Learning: Do people teach and learn about the need and methods of philanthropy?
No – (0)
Yes – percent of OT
  1-50   51-100
  (1)   (2)

PHYSICAL HEALTH

Participation: Is physical health promoted in this setting?
No – (0)
Yes – percent of OT
  1-20   21-40   41-60   61-80   81-100
  (1)   (2)   (3)   (4)   (5)

Supply: Does this setting supply medical or sports equipment for use in other settings?
No – (0)
Yes – percent of OT
  1-20   21-40   41-60   61-80   81-100
  (1)   (2)   (3)   (4)   (5)

Evaluation: Is physical health appraised in this setting?
No – (0)
Yes – percent of OT
  1-50   51-100
  (1)   (2)

Teaching and Learning: Does formal teaching and learning about health problems occur here?
No – (0)
Yes – percent of OT
  1-50   51-100
  (1)   (2)

RECREATION

Participation: Does this setting provide pleasurable activities for its inhabitants?
No – (0)
Yes – percent of OT
  1-20   21-40   41-60   61-80   81-100
  (1)   (2)   (3)   (4)   (5)

Supply: Does this setting supply materials for recreation in other settings?
No – (0)
Yes – percent of OT
  1-20   21-40   41-60   61-80   81-100
  (1)   (2)   (3)   (4)   (5)

Evaluation: Is appreciation or criticism of recreation openly expressed?
No – (0)
Yes – percent of OT
  1-50   51-100
  (1)   (2)

Teaching and Learning: Are people instructed in recreational activities?
No – (0)
Yes – percent of OT
  1-50   51-100
  (1)   (2)

RELIGION

Participation: Are there religious observances in this setting?
No – (0)
Yes – percent of OT
  1-20   21-40   41-60   61-80   81-100
  (1)   (2)   (3)   (4)   (5)

Supply: Are materials for worship in another setting provided in this setting?
No – (0)
Yes – percent of OT
  1-20   21-40   41-60   61-80   81-100
  (1)   (2)   (3)   (4)   (5)

Evaluation: Is religion approved or criticised in this setting?
No – (0)
Yes – percent of OT
  1-50   51-100
  (1)   (2)

Teaching and Learning: Are people instructed in religious forms and values in this setting?
No – (0)
Yes – percent of OT
  1-50   51-100
  (1)   (2)

SOCIAL CONTACT

Participation: Does interpersonal behavior occur here?
No - (0)
Yes - percent of OT
1-20 21-40 41-60 61-80 81-100
(1)   (2)   (3)   (4)   (5)

Supply: Does this setting supply the means of social behavior in other settings?
No - (0)
Yes - percent of OT
1-20 21-40 41-60 61-80 81-100
(1)   (2)   (3)   (4)   (5)

Evaluation: Is there specific approval or disapproval of social behavior in this setting?
No - (0)
Yes - percent of OT
1-50 51-100
(1)   (2)

Teaching and Learning: Are social forms and skills taught in this setting?
No - (0)
Yes - percent of OT
1-50 51-100
(1)   (2)

BEHAVIOR MECHANISM

AFFECTIVE BEHAVIOR (EMOTION)

Participation: Does overt emotional expression occur in this setting?
No - (0)
Yes - percent of OT
0-9   10-33 34-66 67-90 91-100
(0)   (1)   (2)   (3)   (4)

Tempo: What is the fastest rate at which affective behavior normally varies in this setting?
(0) - very constant emotional expression, little variation occurs
(1) - about average fluctuations, within middle range of other settings
(2) - variable emotionality, somewhat above middle range of other settings
(3) - frequent, wide swings in affective behavior

Intensity: How intense is the greatest regular emotional expression in this setting?
(0) - apathetic, low intensity of affective behavior
(1) - affectivity within middle range of other settings
(2) - emotional expression high, above middle range of other settings
(3) - intensely emotional behavior occurs

GROSS MOTOR ACTIVITY

Participation: Does large muscle activity occur here?
No - (0)
Yes - percent of OT
0-9   10-33 34-66 67-90 91-100
(0)   (1)   (2)   (3)   (4)

Tempo: What is the top speed at which gross motor activity normally occurs?
(0) - slow movements, below the middle range of other settings
(1) - about average, within the middle range of other settings
(2) - fast actions, above the middle range of other settings
(3) - as fast as is physically possible

Intensity: What is the maximal amount of energy used when the large muscles are active in this setting?
(0) - weak movements, energy below the middle range of other settings
(1) - medium energy expenditure, within the middle range of other settings
(2) - strong movements, energy expenditure above the middle range of other settings
(3) - greatest possible force used

MANIPULATION

Participation: Are the hands used in the behavior pattern of this setting?
No - (0)
Yes - percent of OT

0-9	10-33	34-66	67-91	91-100
(0)	(1)	(2)	(3)	(4)

Tempo: What is normally the top speed of manipulation in this setting?
(0) - slow movements, below the middle range of other settings
(1) - about ordinary, withing the middle range of other settings
(2) - fast actions, above the middle range of other settings
(3) - as fast as possible

Intensity: What is the greatest force normally used by the hands in this setting?
(0) - weak, below middle range of other settings
(1) - about average, within middle range of other settings
(2) - strong, above middle range of other settings
(3) - force is at maximum level possible

TALKING

Participation: Do people talk or sing in this setting?
No - (0)
Yes - percent of OT

0-9	10-33	34-66	67-90	91-100
(0)	(1)	(2)	(3)	(4)

Tempo: What is the maximal speed of talking or singing?
(0) - slow utterances, below the middle range of other settings
(1) - average, within the middle range of other settings
(2) - fast verbalization, above the middle range of other settings
(3) - as fast as possible

Intensity: What is the greatest loudness of talking or singing in this setting?
(0) - very low and soft speaking or singing
(1) - average, within the middle range of other settings
(2) - loud verbalization, above the middle range of other settings
(3) - maximal loudness possible

THINKING

Participation: Does problem-solving and decision-making occur here?
No - (0)
Yes - percent of OT

0-9	10-33	34-66	67-90	91-100
(0)	(1)	(2)	(3)	(4)

Tempo: What is the top speed with which decisions are usually made and problems solved?
(0) - slow thinking, below the middle range of speedy decisions in other settings
(1) - average, with the middle range of other settings
(2) - fast thinking, above the middle range of other settings
(3) - very fast, lightning-quick decisions

Intensity: What is the maximal level of problem-solving occuring in this setting?
(0) - low intellectual level, below the middle range of other settings
(1) - about average, within the middle range of other settings
(2) - sharp thinking occurs, above the middle range of other settings
(3) - really difficult decisions are made and problems solved

Appendix 2 p6

PRESSURE

CHILDREN'S occupancy of this setting is:

(1) required
(2) urged
(3) invited
(4) neither encouraged nor discouraged
(5) tolerated
(6) resisted
(7) prohibited

ADOLESCENT'S occupancy of this setting is:

(1) required
(2) urged
(3) invited
(4) neither encouraged nor discouraged
(5) tolerated
(6) resisted
(7) prohibited

WELFARE

CHILDREN

(0) This setting is neutral to the welfare of children; it is neither more nor less devoted to them than to other groups.
(1) This setting exists primarily for the welfare of its child members; if there were no child members the setting would cease.
(2) This setting has no child inhabitants (members or performers), but it fosters other settings that are primarily for the welfare of children.
(3) In this setting child performers serve an adult, adolescent or mixed-age membership. If there were no child performers the setting would close or be severely handicapped.

ADOLESCENT

(0) This setting is neutral to the welfare of adolescents; it is neither more nor less devoted to them than to other age groups.
(1) This setting exists primarily for the welfare of its adolescent members; if there were no adolescent members this setting would cease.
(2) This setting has no adolescent inhabitants (members or performers) but it fosters other settings that are primarily for the welfare of adolescents.
(3) In this setting adolescent performers serve an adult, child, or mixed-age membership. If there were no adolescent performers the setting would cease or be severely handicapped.

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AUTONOMY

What are the sites of the power for carrying out the following functions of this setting, and what is the relative power of each site?

SELECTING THE PERFORMER

(9) within the base, by base commander, or FAA supervisor
(7)
(5) within the county (city)
(3) within the state, USARAL, FAA Alaska district
(2) ALCOM, in cases of joint operations
(1) within the nation, pentagon, FAA Washington

ADMITTING MEMBERS - where are the membership requirements set?

(9) within the base, by base commander, or FAA supervisor
(7)
(5) within the county (city)
(3) within the state, USARAL, FAA Alaska district
(2) ALCOM, in cases of joint operations
(1) within the nation, pentagon, FAA Washington

DETERMINING POLICY - where are plans and programs made?

(9) within the base, by base commander, or FAA supervisor
(7)
(5) within the county (city)
(3) within the state, USARAL, FAA Alaska district
(2) ALCOM, in cases of joint operations
(1) within the nation, pentagon, FAA Washington

ESTABLISHING FINANCIAL ARRANGEMENTS - where are fees and prices set?

(9) within the base, by base commander, or FAA supervisor
(7)
(5) within the county (city)
(3) within the state, USARAL, FAA Alaska district
(2) ALCOM, in cases of joint operations
(1) within the nation, pentagon, FAA Washington

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APPENDIX 3A Behavior Setting Data Sheet

Name: _____

Genotype # 1-4:	Authority System 9-10:	No. of 12-14: Occurrences:

Behavior Setting No. 5-8:	Class of 11: Authority System

Occupancy Time of Base Subgroups

Group	Col.No.	No.P.	Col.No.	O.T.
On Base				
Inf	ML 15-18:		42-46:	
	C 19-22:		47-51:	
Presch	ML 23-26:		52-56:	
	C 27-30:		57-61:	
Y S	ML 31-34:		62-66:	
	C 35-38:		67-71:	
0 S	ML 39-42:		72-76:	

End of Card (2)
Behavior Setting No. 1-4: ☐☐☐☐

0 S	C 43-46:		5-9:	
	ML 47-50:		10-14:	
Adol	C 51-54:		15-19:	
	ML 55-58:		20-25:	
Adult	C 59-62:		26-30:	
Aged	63-66:		31-35:	

| Males | ML 67-70: | | 36-41: | |
| | C 71-74: | | 42-46: | |

Building No. 75-78: ☐☐☐☐

End of Card (1)
Behavior Setting
No. 1-4: ☐☐☐☐

| Females | ML 5-8: | | 47-51: | |
| | C 9-12: | | 52-56: | |

| Negroes | 13-16: | | 57-61: | |
| Whites | 17-20: | | 62-67: | |

| On Base | ML 21-24: | | 68-73: | |
| Total | C 25-28: | | 74-78: | |

End of Card (3)
Behavior Setting
No. 1-4: ☐☐☐☐

| Off Base | ML 29-32: | | 5-9: | |
| Total | C 33-36: | | 10-14: | |

Grand Total 37-41: ☐☐☐☐☐   15-20: ☐☐☐☐☐☐

Total Duration 21-25 ☐☐☐☐☐

Max.Pene. of Subgroups

Group	Col.No.	
Inf	26	☐
Presch	27	☐
Y S	28	☐
0 S	29	☐
Adol	30	☐
Adult	31	☐
Aged	32	☐
Males	33	
Females	34	
Negroes	35	
Whites	36	

Social C. Pen. L.
I	37	
II	38	
III	39	
IV	40	

Grand Max. 41-42 ☐☐

Performers (number)
On Base ML 43-45	☐☐☐
Total C 46-48	☐☐☐
Off Base ML 49-50	☐☐
Total C 51-53	☐☐☐

Grand Total 54-57 ☐☐☐☐

Perf/Pop. 58-59 ☐☐

White Perf. 60-63 ☐☐☐☐
Negro Perf. 64-66 ☐☐☐

End of Card (4)
Behavior Setting
No. 1-4: ☐☐☐☐

ACTION PATTERN RATE

Aes:	5:	
Bus:	6:	
Prof:	7:	
Educ:	8:	
Govt:	9:	
Nutr:	10:	
PersAp:	11:	
Phil:	12:	
PhysH:	13:	
Rec:	14:	
Rel:	15:	
Soc:	16:	

MECHANISM RATE
AffB:	17:	☐
GroMot:	18:	
Manip:	19:	
Talk:	20:	
Think:	21:	

GEN
RICH: 22-23: ☐

Pressure Rating
| Child: | 24: | ☐ |
| Adol: | 25: | |

Welfare Rating
| Child: | 26: | ☐ |
| Adol: | 27: | |

Autonomy Rating
| Wtd: | 28: | ☐ |

Social C. O.T.
I	29-33:	
II	34-38:	
III	39-43:	
IV	44-48:	

E, O or I 49: ☐

Jan.	50:	
Febr.	51:	
March	52:	
April	53:	
May	54:	
June	55:	
July	56:	
Aug.	57:	
Sept.	58:	
Oct.	59:	
Nov.	60:	
Dec.	61:	

(INDICATES INPUT NUMBER)
(INDICATES END OF CARD)
(DATA SHEET IS SET UP FOR 5 CARDS ON COMPUTER)

1974 behavior setting data sheet   cold regions habitability   military installations

(End of Card 5)   24

APPENDIX 3B₁ Behavior Setting Data Sheet Annotated

ASSIGNING BEHAVIOR NUMBERS AND GROUPING INTO GENOTYPES TAKES PLACE AFTER SURVEY HAS BEEN COMPLETED

USE A FULLY DESCRIPTIVE NAME TO FACILITATE GENOTYPING (E.G. NCOIC OF INSTALLATION MAINTENANCE FACILITY)

SEE APPENDIX 5

NUMBER OF DAYS A YEAR SETTING OCCURS

Name:

Genotype #	Authority System	No. of Occurrences:
Behavior Setting No.	Class of Authority System	

NUMBER PERSONS *OCCUPANCY TIME IN HOURS*

Occupancy Time of Base Subgroups

Group	No.P.	O.T.
On Base		

FOLLOWING CATEGORIES ARE ONLY FOR POPULATION IN SETTINGS WHO LIVE ON BASE

MILITARY / CIVILIAN

AGE GROUPS (SEE BARKER FOR BREAKDOWN)

Inf	ML			
	C			
Presch	ML			
	C			
Y S	ML			
	C			
O S	ML			
	C			
Adol	ML			
	C			
Adult	ML			
Aged	C			

SEX

Males	ML			
	C			
Females	ML			
	C			

RACE

Negroes			
Whites			

CAN USE AGE OR SEX CATEGORIES FOR SUMMATION. BEST TO USE EACH AS A CHECK

On Base Total	ML			
	C			

ONLY FOR POPULATION IN SETTINGS WHO LIVE OFF BASE

Off Base Total	ML			
	C			

SUM OF ON AND OFF BASE TOTALS

Grand Total		

TOTAL NUMBER OF HOURS SETTING OCCURRED DURING YEAR

Total Duration					

25

MAXIMUM PENETRATION LEVEL FOR ANY INDIVIDUAL
WITHIN THE FOLLOWING CATEGORIES. RATING IS "0"
IF NO ONE WITHIN EACH SUBGROUP IS PRESENT.
SCORES CAN RANGE FROM "0" TO "6", ALL PERSON
CONSIDERED, WHETHER MILITARY OR CIVILIAN, AND WHETHER
THEY LIVE ON OR OFF BASE

	Max. Pene. of Subgroups Group

AGE

Inf	
Presch	
Y S	
O S	
Adol	
Adult	
Aged	

SEX

Males	
Females	

RACE

Negroes	
Whites	

SOCIAL CLASS

Social C. Pen. L.	
I	
II	
III	
IV	

HIGEST PENETRATION HELD BY ANY INDIVIDUAL
IN ABOVE CATEGORIES. SELDOM IS SCORE LESS
THAN "4"

	Grand Max.

SUM ALL SCORES AND HOLD FOR CALCULATING GENERAL RICHNESS INDEX

INDIVIDUALS HAVING PENETRATION SCORES OF "4, 5 OR 6"

	Performers (number)

NUMBER OF ON BASE PERFORMERS — MILITARY AND CIVILIAN

NUMBER OF OFF BASE PERFORMERS — MILITARY AND CIVILIAN

On Base ML	
Total C	
Off Base ML	
Total C	

TOTAL NUMBER OF PERFORMERS, ON AND OFF BASE

Grand Total	

TOTAL NUMBER OF PERFORMERS DIVIDED BY
TOTAL POPULATION OF SETTING

Perf/Pop.	

NUMBER OF PERFORMERS BY RACE

White Perf.	
Negro Perf.	

SEE APPENDIX 2 ────────────────────────────

SCORES OBTAINED ─────────────────────

ACTION PATTERN RATE	
Aes:	
Bus:	
Prof:	
Educ:	
Govt:	
Nutr:	
PersAp:	
Phil:	
PhysH:	
Rec:	
Rel:	
Soc:	

SEE APPENDIX 2 ─────────────────────

SCORES OBTAINED ─────────────────────

MECHANISM RATE	
AffB:	
GroMot:	
Manip:	
Talk:	
Think:	

SUM OF MAX PEN + SUM OF ACTION PATTERN RATE PLUS SUM OF MECHANISM RATE ⟧ TIMES OCCUPANCY TIME CODE (SEE APPENDIX 6)
─────────── DIVIDED BY 100

GEN	
RICH:	

SEE APPENDIX 2 ─────────────────────

Pressure Rating	
Child:	
Adol:	

SEE APPENDIX 2 ─────────────────────

Welfare Rating	
Child:	
Adol:	

SEE APPENDIX 2 ─────────────────────

Autonomy Rating	
Wtd:	

TOTAL OCCUPANCY TIME OF EACH SOCIAL CLASS ──────

Social C. O.T.			
I			
II			
III			
IV			

E = SETTING BEGAN ON BASE AND CONTINUED OFF BASE
O = SETTING OCCURS ON POST
I = SETTING BEGAN OFF BASE AND CONTINUED ON BASE

E, O or I	

MONTHS IN YEAR SETTING OCCURRED ──────

Jan.	
Febr.	
March	
April	
May	
June	
July	
Aug.	
Sept.	
Oct.	
Nov.	
Dec.	

APPENDIX 4 Social Scale for Cold Regions Population

	MILITARY		WARRANT OFFICER	CIVIL SERVICE GENERAL SCHEDULE		CIVIL SERVICE WAGE BOARD	
1	General	O7-10		GS	16-18		
	Colonel	O6		GS	15		
	LTC	O5		GS	13-14	S	16-17
	Major	O4		GS	12	L / S	13-15
2	Captain	O3	4	GS	10-11	L / S	11-12
	1 LT	O2	3 / 2	GS	8-9	W L S	6-10
	2 LT	O1	1	GS	7	W L S	10-12 / 7-8
3	E-9			GS	6	W L S	
	E-8			GS	6	W L S	
	E-7			GS	5	W L S	7 / 4
	E-6			GS	4	W L S	7 / 3
	E-5			GS	4	W L S	2
4	E-4			GS	3	W L S	5 / 4 / 1
	E-3			GS	2	W L	4 / 3
	E-2			GS	1	W L W	3 / 2
	E-1					W L	1-2 / 1

Notes: (A) Under Wage Board Designations: W=Wage, L=Leader, S=St

(B) This correlation was derived for the USACRREL Habitability
Research by Mr. E. Elkins, Chief, Civilian Personnel Office, Ft.
Wainwright, Alaska. The evaluation is based on a combination of
(a) AR 210-10, 10 June 1970, established for Geneva Convention
purposes (b) where job responsibility is considered 65% and social
aspects considered 35%. Pay which included special allowances
benefits, retirement rights, etc. was excluded due to incomparable
ambiguities.

APPENDIX 5 Authority and Class Sheet for Cold Regions Organizations

Authority System   9-10   Class of Authority   11

List of bases as follows: Classes of Authority Systems as follows:
Code   Code
1. Murphy Dome FAA   1. FAA (1, 3, 5, 7)
2. Murphy Dome AC&W   2. AC&W (2, 4, 6)
3. Cordova FAA   3. Fort Wainwright Special Forces
4. Campion AC&W   (8, 9, 10, 11, 12, 22, 23, 24, 25, 26,
5. Kotzebue FAA   27, 28, 29)
6. Kotzebue AC&W   4. Fort Wainwright Tenant Organizations
7. Gulkana FAA   (13, 14, 15, 16, 17)
8. Headquarters Company, Fort Wainwright 5. State of Alaska
9. Support Company, Fort Wainwright   6. White Alice
10. 47th Eng. Co., Fort Wainwright   7. NCO Club
11. 472 MP Co., Fort Wainwright   8. Officers Club
12. Bassett Army Hospital   9. USARAL
13. 4th btn., 9th Inf.   10. Commercial
14. Battery C1, 37th Art.   11. Other government agency
15. Troop E (Air) 1st Cav.
16. 222d Avn. btn.
17. Fixed Signal Co.
18. Meteorological Team   Building Numbers
19. USA CRREL   Code
20. AMRL
21. University of Alaska   9999 All Buildings
22. DCS Log (includes gatherings in home)8888 Several Buildings
23. DCSPER Rec. - sp. serv.   7777 Open Land Post Proper
24. DCSOPS   6666 Open Land Post Remote
25. Provost Marshal   5555 On & Off Post Road (Taxi)
26. Facility Engr.   4444 Roads and Sidewalks on Post
27. Post Chapel & Chaplains   3333 Various Buildings & open Land
28. Fort Wainwright Commander's Staff
29. DCS COMPT
30. Credit Union
31. Wacs

APPENDIX 6   Occupancy Time Code (from Barker[1], page 209-210)

Interval	Code	Interval	Code	Interval	Code
0-1	1	14,911-16,206	36	92,796-97,151	66
2-5	2	16,207-17,575	37	97,152-101,640	67
6-14	3	17,576-19,019	38	101,641-106,264	68
15-30	4	19,020-20,150	39	106,265-111,025	69
31-55	5	20,151-21,750	40	111,026-115,925	70
56-91	6	21,751-23,431	41	115,926-120,966	71
92-140	7	23,432-25,195	42	120,967-126,150	72
141-204	8	25,196-27,044	43	126,151-131,479	73
205-285	9	27,045-28,980	44	131,480-136,955	74
286-385	10	28,981-31,005	45	136,956-142,580	75
386-506	11	31,006-33,121	46	142,581-148,356	76
507-650	12	33,122-35,330	47	148,357-154,285	77
651-819	13	35,331-37,154	48	154,286-160,369	78
820-1,015	14	37,155-39,555	49	160,370-166,610	79
1,016-1,240	15	39,556-42,055	50	166,611-173,010	80
1,241-1,496	16	42,056-44,656	51	173,011-179,571	81
1,497-1,785	17	44,657-47,360	52	179,572-186,295	82
1,786-2,109	18	47,361-50,169	53	186,296-193,184	83
2,110-2,470	19	50,170-53,085	54	193,185-200,240	84
2,471-2,870	20	53,086-56,110	55	200,241-207,465	85
2,871-3,311	21	56,111-59,246	56	207,466-214,861	86
3,312-3,795	22	59,247-62,495	57	214,862-222,430	87
3,796-4,324	23	62,496-65,859	58	222,431-230,174	88
4,325-4,900	24	65,860-69,340	59	230,175-238,095	89
4,901-5,525	25	69,341-72,940	60	238,096-246,195	90
5,526-6,201	26	72,941-76,661	61	246,196-254,476	91
6,202-6,930	27	76,662-80,505	62	254,477-262,940	92
6,931-7,714	28	80,506-84,474	63	262,941-271,589	93
7,715-8,555	29	84,475-88,570	64	271,590-280,425	94
8,556-9,455	30	88,571-92,795	65	280,426-289,450	95
9,456-10,416	31			289,451-298,666	96
10,417-11,440	32			298,667-308,075	97
11,441-12,529	33				
12,530-13,685	34				
13,686-14,910	35				

PENETRATION LEVEL

SOCIAL CLASS

POPULATION (ADULT)

	PEN L	SC 1		SC 2		SC 3		SC 4	
		MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE
ON POST MILITARY									
ON POST CIVILIAN									
OFF POST MILITARY									
OFF POST CIVILIAN									

Handwritten notes within the form:

PEN L column: 1, 2

ON POST MILITARY / SC 2 area:
1/2
5 1/2   5 1/2

2/4 — PEOPLE FOR SUCH POPULATION
2 FEMALES NEGRO FOR A
TOTAL OF 4 HOURS
PENETRATION LEVEL IS 4

ON POST CIVILIAN area:
5/12 — 5 MALES FOR A TOTAL OF 12 HOURS
OCCUPANCY TIME DURING YEAR
PENETRATION LEVEL IS 1

usacrrel cbl march 1974

31

APPENDIX 7B Sample Population Form and Data Entered on Data Sheet

POPULATION (ADULT) — population form grid with subgroups ON POST MILITARY, ON POST CIVILIAN, OFF POST MILITARY, OFF POST CIVILIAN (Male/Female columns)

Occupancy Time of Base Subgroups

Group		NO.P.		O.T.
On Base				

Subgroups (ML/C): Inf, Presch, Y S, O S, Adol, Adult, Aged, Males, Females, Negroes, Whites

Max. Pene. of Subgroups

Group	
Inf	
Presch	
Y S	
O S	
Adol	
Adult	6
Aged	
Males	2
Females	4
Negroes	4
Whites	6

Social C. Pen. L.

I	3
II	6
III	4
IV	4

Grand Max. | 6 |

On Base Total	ML	3 5	5 3
	C	6	6
Off Base Total	ML	2	7
	C	7	1 7
Grand Total		5 0	8 2

Performers (number)

On Base Total	ML	1 0
	C	0
Off Base Total	ML	0
	C	1
Grand Total		1

Social C. O.T.

I	1
II	5 9
III	1 2
IV	1 0

Perf/Pop. | . 1 3 |

$$\frac{11}{82} = 0.134$$

White Perf. | 9 |
Negro Perf | 2 |

APPENDIX 8   Sections <u>not</u> circled are prepared by individual performing
calculations.

Name:

Genotype # 1-4:	Authority System 9-10:	No. of 12-14: Occurrences:

Behavior Setting No. 5-8:	Class of 11: Authority System

Occupancy Time of Base Subgroups						Max.Pene. of Subgroups		ACTION PATTERN RATE
Group	Col.No.	No.P.	Col.No.	O.T.		Group	Col.No.	

On Base

	ML	15-18:		42-46:					Aes: 5:
Inf	C	19-22:		47-51:		Inf	26		Bus: 6:
	ML	23-26:		52-56:					Prof: 7:
Presch	C	27-30:		57-61:		Presch	27		Educ: 8:
	ML	31-34:		62-66:					Govt: 9:
Y S	C	35-38:		67-71:		Y S	28		Nutr: 10:
O S	ML	39-42:		72-76:		O S	29		PersAp: 11:

End of Card (2)
Behavior Setting
No.   1-4:

Adol   30

Phil: 12:
PhysH: 13:
Rec: 14:

O S	C	43-46:		5-9:		Adult	31		Rel: 15:
	ML	47-50:		10-14:		Aged	32		Soc: 16:
Adol	C	51-54:		15-19:					
	ML	55-58:		20-25:		Males	33		MECHANISM RATE
Adult	C	59-62:		26-30:		Females	34		AffB: 17:
Aged		63-66:		31-35:					GroMot: 18:
						Negroes	35		Manip: 19:
	ML	67-70:		36-41:		Whites	36		Talk: 20:
Males	C	71-74:		42-46:					Think: 21:

Social C. Pen. L.

I	37
II	38
III	39
IV	40

GEN
RICH: 22-23:

Building No. 75-78:

End of Card (1)
Behavior Setting
No.   1-4:

Grand Max. 41-42

Pressure Rating
Child: 24:
Adol: 25:

	ML	5-8:		47-51:			Welfare Rating
Females	C	9-12:		52-56:			Child: 26:
							Adol: 27:
Negroes		13-16:		57-61:		Performers (number)	
Whites		17-20:		62-67:		On Base ML 43-45	Autonomy Rating
						Total C 46-48	Wtd: 28:
						Off Base ML 49-50	
						Total C 51-53	Social C. O.T.
							I 29-33:
						Grand Total 54-57	II 34-38:
On Base ML	21-24:		68-73:				III 39-43:
Total C	25-28:		74-78:				IV 44-48:

End of Card (3)
Behavior Setting
No.   1-4:

Perf/Pop. 58-

E, O or I 49:

Off						White Perf.60-63	Jan. 50:
Base	ML	29-32:		5-9:		Negro Perf.64-66	Febr. 51:
Total	C	33-36:		10-14:			March 52:
							April 53:
Grand						End of Card (4)	May 54:
Total	37-41:		15-20:		Behavior Setting	June 55:
						No. 1-4:	July 56:

Total
Duration 21-25

Aug.   57:
Sept.   58:
Oct.   59:
Nov.   60:
Dec.   61: